

In the Claims:

1- 17. (cancelled)

18. (new) A microwave oven having wall means defining an oven cavity to receive food to be cooked, the wall means having a launch wall with an aperture therein; a launch box mounted on the external side of the launch wall so as to cover the aperture; three sides of the box being in respective communication with three waveguides each fed by a respective magnetron so that there are three magnetrons all operative to supply microwave energy through the common launch box and the common aperture and thence into the oven cavity, wherein the launch box is of cuboid shape to three side walls of which are respectively fitted the three waveguides respectively fed by the three magnetrons, wherein the launch box has two opposite side walls and in intermediate side wall, and in which two of the three waveguides are attached to opposite side walls of the box and have a longer length than the third waveguide which is attached to the intermediate wall of the box, and wherein the pair of longer waveguides each have an effective length corresponding to one wavelength at the operating frequency of the corresponding magnetron and the shorter waveguide has an effective length corresponding to one half wavelength at the corresponding frequency.

19. (new) A microwave oven according to claim 18, in which the launch box houses a rotatable phase modulator designed so that the impedance seen by each magnetron is different at each rotatable position of the modulator so that at no time is the same frequency generated by more than one magnetron.

20. (new) A microwave oven according to claim 19, in which the rotatable phase modulator comprises a bladed disc.

21. (new) A microwave oven according to claim 18, in which a choke assembly is attached to the launch box.

22. (new) A microwave oven according to claim 21, in which the choke assembly includes a fixed structure having two annular members attached together at their rims and being dished so as to enclose a space accommodating a fixed attenuator tube and a fixed half

wavelength plate, with one of the two annular members being attached to the launch box so that this annular member is in registration with the aperture in the launch wall.

23. (new) A microwave oven according to claim 22, in which, the choke assembly has a rotatable part which includes a rotatable choke plate spaced from the half wavelength plate and mounted on the shaft of an electric motor which drives not only the choke plate but also a rotatable phase modulator housed in the launch box.

24. (new) A microwave oven according to claim 23, in which the drive shaft extends from the motor, through the choke plate and thence through the stationary half wavelength plate and the attenuator tube so as to project into the launch box where the phase modulator is attached to the extreme end of the shaft.

25. (new) A microwave oven according to claim 19, in which the phase modulator has a planar hub region which occupies a main plane of the modulator and from which project equi-angularly spaced blades each carrying a flange bent so as to project from one side of the main plane of the phase modulator.

26. (new) A microwave oven according to claim 25, in which further flanges project from the other side of the main plane, with the object of providing the phase modulator with a shape which contributes to the establishment of multi-modes in the oven cavity.

27. (new) A microwave oven according to claim 18, wherein a match plate is mounted in the cavity so as to be spaced a small distance from the launch wall and in registration with the aperture so that the gap defined between the edges of the match plate and the launch wall has at least one hole therein, with the edge of the hole providing a means for coupling microwave energy to resonant modes in the central region of the oven cavity.

28. (new) A microwave oven according to claim 27, in which each hole is formed in a region of the match plate which region is interposed between the central region of the oven cavity and the central region of the launch box.

29. (new) A microwave oven according to claim 28, in which said region of the match plate is of rectangular shape.

30. (new) A microwave oven according to claim 28, in which a generally central region of the match plate has four holes, each in the form of a cut out in the match plate, the four cut outs being arranged in a symmetrical two-by-two rectangular array.

31. (new) A microwave oven according to claim 27, in which each hole is of a rectangular shape.

32. (new) A microwave oven having wall means defining an oven cavity to receive food to be cooked, the wall means having a launch wall with an aperture therein; a launch box mounted on the external side of the launch wall so as to cover the aperture; two, three or four sides of the box being in respective communication with two, three or four waveguides each fed by a respective magnetron so that there are two, three or four magnetrons all operative to supply microwave energy through the common launch box and thence into the oven cavity, wherein a choke assembly is attached to the launch box, and wherein the choke assembly includes a fixed structure having two annular members attached together at their rims and being dished so as to enclose a space accommodating a fixed attenuator tube and a fixed half wavelength plate, with one of the two annular members being attached to the launch box so that this annular member is in registration with the aperture in the launch wall.

33. (new) A microwave oven according to claim 32, wherein a match plate is mounted in the cavity so as to be spaced a small distance from the launch wall and in registration with the aperture so that the gap defined between the edges of the match plate and the launch wall has at least one hole therein, with the edge of the hole providing a means for coupling microwave energy to resonant modes in the central region of the oven cavity.

34. (new) A microwave oven according to claim 33, in which each hole is formed in a region of the match plate which region is interposed between the central region of the oven cavity and the central region of the launch box.

35. (new) A microwave oven according to claim 34, in which said region of the match plate is of rectangular shape.

36. (new) A microwave oven according to claim 34, in which a generally central region of the match plate has four holes, each in the form of a cut out in the match plate, the four cut outs being arranged in a symmetrical two-by-two rectangular array.

37. (new) A microwave oven having wall means defining an oven cavity to receive food to be cooked, the wall means having a launch wall with an aperture therein; a launch box mounted on the external side of the launch wall so as to cover the aperture; four sides of the box being in respective communication with four waveguides each fed by a respective magnetron so that there are four magnetrons all operative to supply microwave energy through the common launch box and the common aperture and thence into the oven cavity, wherein the launch box is of cuboid shape to four side walls of which are respectively fitted the four waveguides respectively fed by the four magnetrons, wherein the launch box has a first pair of opposite side walls and a second pair of opposite side walls and in which two of the four waveguides are respectively attached to the first pair of opposite side walls of the box and have a longer length than the two remaining waveguides which are respectively attached to the second pair of opposite walls of the box, and wherein the pair of longer waveguides each have an effective length corresponding to one wavelength at the operating frequency of the corresponding magnetron and each of the shorter waveguides has an effective length corresponding to one half wavelength at the corresponding frequency.